

A CASE SERIES OF MIGRAINE CHANGES FOLLOWING A MANIPULATIVE THERAPY TRIAL

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ABSTRACT:

Objective: To present the characteristics of four cases of migraine, who were included as participants in a prospective trial on chiropractic spinal manipulative therapy for migraine.

Method: Participants in a migraine research trial, were reviewed for the symptoms or clinical features and their response to manual therapy.

Results: The four selected cases of migraine responded dramatically to SMT, with numerous self reported symptoms being either eliminated or substantially reduced. Average frequency of episodes was reduced on average by 90%, duration of each episode by 38%, and use of medication was reduced by 94%. In addition, several associated symptoms were substantially reduced, including nausea, vomiting, photophobia and phonophobia.

Discussion: The various cases are presented to assist practitioners making a more informed prognosis.

Key Indexing Terms (MeSH): Migraine, diagnosis, manual therapy.

INTRODUCTION

Migraine, in its various forms, affects approximately 12 to 15% of people throughout the world, with an estimated incidence in the USA of 6% of males and 18% of females (1). Depending on the severity of a migrainous attack it is apparent that most, if not all, of the body systems can be affected (2). Consequently migraine poses a substantial threat to regular sufferers, which debilitates them to varying degrees from slight to severe (3).

One early definition of migraine highlights some potential difficulties in research assessing treatment for migraine. "A familial disorder characterised by recurrent attacks of headache widely variable in intensity, frequency and duration. Attacks are commonly unilateral and are usually associated with anorexia, nausea and vomiting. In some cases they are preceded by, or associated with neurological and mood disturbances. All of the above characteristics are not necessarily present in each attack or in each patient" (4). (Migraine and headache of the World Federation of Neurology in 1969).

Some of the more common symptoms of migraine include headache, an aura, scotoma, photophobia, phonophobia, scintillations, nausea and/or vomiting (5).

The source of pain in migraines is to found in the intra- and extracranial blood vessels (6). The blood vessel walls are pain sensitive to distension, traction or displacement. The idiopathic dilation of cranial blood vessels, together with an increase in a pain-threshold-lowering substance, result in headache for migraine headache (7).

Migraine has been shown to be reduced following chiropractic spinal manipulative therapy (8-18). In addition, other research suggests a potential role of musculoskeletal conditions in the aetiology of migraine (19-22). A misdiagnosis of migraine or cervicogenic headache could give a misleading positive result for improvement (23). Therefore, an accurate diagnosis needs to be made, based on standard accepted taxonomy.

A new classification system of headaches has been developed by the Headache Classification Committee of the International Headache Society (IHS), which contains a main category covering migraine (24). However, this taxonomy system still has several areas of potential overlap or controversy regarding the diagnosis of the headache (23).

This paper presents three cases of migraine with aura (MA) and one of migraine without aura (MW), detailing their symptoms, clinical features and response to chiropractic Spinal Manipulative Therapy (SMT). The authors hope to enhance practitioners knowledge for migraine conditions that may respond favourably with SMT.

FEATURES OF MIGRAINE

The IHS defines migraines as having at least two of the following: unilateral location, pulsating quality, moderate or severe intensity, aggravated by routine physical activity. During the headache the person must also experience either nausea &/or vomiting, and photophobia &/or phonophobia (24). In addition, there is no suggestion either by history, physical or neurological examination that the person has a headache listed in groups 5-11 of their classification system (23-25).

A previous study by the author has detailed features of the different classifications of migraine (8). The aura is the distinguishing feature between the old classifications of common (MW) and classic migraine (MA) (24). It has

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been described by migraine sufferers as an opaque object, or a zigzag line around a cloud, even cases of tactile hallucinations have been recorded (6,7). The most common auras consist of homonymous visual disturbances, unilateral parathesias &/or numbness, unilateral weakness, aphasia or unclassifiable speech difficulty.

The potential mechanisms for the different migraine types are poorly understood. There have been a number of aetiologies proposed in the literature, but none seem to be able to explain all the potential symptoms experienced by migraine sufferers (26). The IHS describe changes in blood composition and platelet function as a triggering role. Processes which occur in the brain act via the trigemino-vascular system and the intra and extracranial vasculature and perivascular spaces (24).

METHODOLOGY

Based on a previous reported study (9) which involved 32 subjects who received chiropractic SMT for MA, three cases are presented which were selected due to the significant changes the patient experienced.

People with migraines were advertised for participation in the study, via the radio and newspapers within a local region of Sydney. All applicants completed a questionnaire, developed from Vernon (27) and has been reported in a previous study (9).

The participants to take part in the trial were selected according to responses in the questionnaire of specific symptoms. The criteria for MA diagnosis was compliance with at least 5 out of the following indicators: reaction to pain requiring cessation of activities or the need to seek a quiet dark area; pain located around the temples; pain described as throbbing; associated symptoms of nausea, vomiting, aura, photophobia or phonophobia; migraine precipitated by weather changes; migraine aggravated by head or neck movements; previous diagnosis of migraine by a specialist; and a family history of migraine.

Participants also had to experience migraine at least once a month, but not daily and the migraines could not have been initiated by trauma. Participants were excluded from the study if there were contra-indications to SMT, such as meningitis or cerebral aneurysm. In addition, participants with temporal arteritis, benign intracranial hypertension or space occupying lesions, were also excluded due to safety aspects.

The trial was conducted over six months, and consisted of 3 stages: two months pre-treatment, two months treatment, and two months post treatment. Participants completed diaries during the entire trial noting the

frequency, intensity, duration, disability, associated symptoms and use of medication for each migraine episode. In addition, clinic records were compared to their diary entries of migraine episodes. Concurrently, the subjects were contacted by telephone by the author every two weeks and asked to describe the migraine episodes for comparison to their diaries.

A detailed history of the patients' subjective pain features was taken during the initial consultation. This included the type of pain, duration, onset, severity, radiation, aggravating and relieving factors. The history also included medical features, a systems review for potential pathologies, previous treatments and its effects. Assessment of subluxation included: orthopaedic and neurological testing, segmental springing, mobility measures such as visual estimation of range of motion, assessment of previous radiographs, specific chiropractic vertebral testing procedures, as well as response of the patient to SMT.

In addition, several vascular investigations were performed where indicated, which include: vertebral artery test, manipulative provocation test, blood pressure assessment, and abdominal aortic aneurysm screening.

During the treatment period, the subjects continued to record migraine episodes in their diary, and receive telephone calls from the authors. Treatment consisted of short amplitude, high velocity spinal manipulative thrusts, or areas of fixation determined by the physical examination. Comparison was made of initial baseline episodes of migraine prior to commencement of the study and at six months following its cessation.

CASE 1

A 25 year old, 65kg Caucasian male presented with neck pain which had commenced in early childhood, that he felt may have been related to his prolonged birth. During the history the patient stated that he suffered a regular migraine headaches (3-4 per week) which he supposed was related to a motor vehicle accident, two years prior to his presentation. He reported that his "migraine" symptoms were a unilateral throbbing headache, an aura, nausea, vomiting, vertigo, and photophobia. Sleep tended to alleviate the symptoms and he required Allegren medication (25mg) on a daily basis.

From diaries the patient was required to complete in the study, a migraine would occur 14 times a month, last an average 12.5 hours and he could perform duties after 8 hours. In addition a visual analogue scale score (VAS) for an average episode was 8.5 out of a possible maximum score of ten, corresponding to a description of "terrible" pain.

On examination, he was found to have sensitive suboccipital and upper cervical musculature, and decreased range of motion at the joint between the occiput and first cervical vertebra, the atlanto-occipital facet joint (Occ-C1), coupled with pain on flexion and extension of the cervical spine. He also had significant reduction in thoracic spine motion and an increase in thoracic kyphosis.

Treatment

The patient received chiropractic adjustments (described above) to his Occ-C1 joint, upper thoracic spine and the affected hypertonic musculature. An initial course of 16 diversified chiropractic treatments was conducted as part of a research program that the patient was participating in. The program involved recording several features for every migraine episode, including visual analogue scores, duration, medication and time before they could return to normal activities. In addition, he was shown some stretches and other exercises for his neck muscles and proved compliant.

Outcome

The patient reported a dramatic improvement after the course of treatment and had noticeably reduced frequency and intensity of migraines. This had continued when the patient was contacted at a period of 6 months after the study had ceased (Fig 1). At that point the patient reported having 2 migraines a month, with a VAS score of 5 out of ten, and the average duration had fallen to 7 hours (Fig's 1-3). In addition, he now used no medication and noted that he no longer experienced nausea, vomiting, photophobia or phonophobia (Table 1).

CASE 2

A 43 year old female university clerk presented complaining of chronic recurring headaches each lasting on average five days, sinus trouble due to allergy, and disturbed vision. The patient stated she experienced "migraines" which had been occurring since the age of eight. During the migraines she experienced nausea, visual disturbances, photophobia, phonophobia and scotoma. The pain usually began around her right eye but would often change to the left temple. She did not describe the pain as throbbing and the pain only stopped activities on a few occasions each year.

The patient stated she experienced the migraines once a month, except during springtime, when the migraines would occur at least once a week. She had been prescribed hormone replacement therapy (HRT) for twelve months following menopause, which had not changed the migraines. She also reported a VAS score of eight for an average episode and that an average episode lasted between six to eight hours.

In her history she reported that she had experienced many falls while horse riding between the ages of eight to ten. However, she believed that no bones were broken at the time of the falls, although this was not confirmed by radiographs at the time of injury. She had two children and was active, currently playing tennis, walking and was a keen gardener. Her past treatment included non-prescription medication for her sinus problems (Teldane),

Table 1: Review Of Selected Cases Presenting With Migraine

<i>PATIENT FEATURES</i>	<i>MAJOR FINDINGS</i>	<i>SUGGESTED DIAGNOSIS</i>	<i>TREATMENT</i>	<i>RESULT</i>
25 y.o. M, postman	Posterior neck & shoulder pain (A, N, Vo, Ph, Pn)	Migraine with aura (Category 1.2)	Soft tissue; C1-2 & T5-6 SMT	Freq v 85% medn v 100%
50 y.o. F, clerk	Chronic recurring HA, (A, N, S, Ph, Pn)	Migraine with aura (Category 1.2)	C1-2, T5-6 & L4-5 SMT, soft tissue & infra-red therapy	Freq v 100% VAS v 39%, medn v 92%
21 y.o. F, student/tutor	Suboccipital & shoulder pain, (N, Vo, D, Ph, Pn)	Migraine without aura (Category 1.1)	C1-2, T3-6 SMT, stretches, soft tissue	Freq v 95%, duration v 50%
34 y.o. M, electrician	Posterior neck pain & MA (N, Vo, Ph, A)	Migraine with aura (Category 1.2)	C1-2 & T3-4 SMT; Soft tissue	Freq v 80% medn v 94%

KEY: A = Aura; N = Nausea; Vo = Vomiting; B = Blurred vision; D = Dizziness; Ph = Photophobia; Pn = Phonophobia; S = Sinus problems; v = Decreased; ^ = Increased; MA = Migraine with aura; MW = Migraine without aura; HA = Headache; Freq = Frequency; Medn = Medication; SMT = Spinal manipulative therapy.

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however this did not seem to relieve the migraine. The patient stated she had previously had pethidine injections due to the severity of the migraines.

On examination she had an increased thoracic kyphosis, associated Trapezius hypertonicity and trigger points. She exhibited slight scoliosis (negative on Adams test) in the lumbar and thoracic regions. The patient also had moderate limitation in cervical spine mobility, notably in left lateral flexion and right rotation.

Treatment

Treatment consisted of diversified chiropractic spinal adjustments, especially to the C1-2, T5-6, L4-5 joints to correct the restriction of movement. Vibrator massage, and infra-red therapy were used to complement the

Figure 1: Changes in frequency of migraine episodes for the four cases.

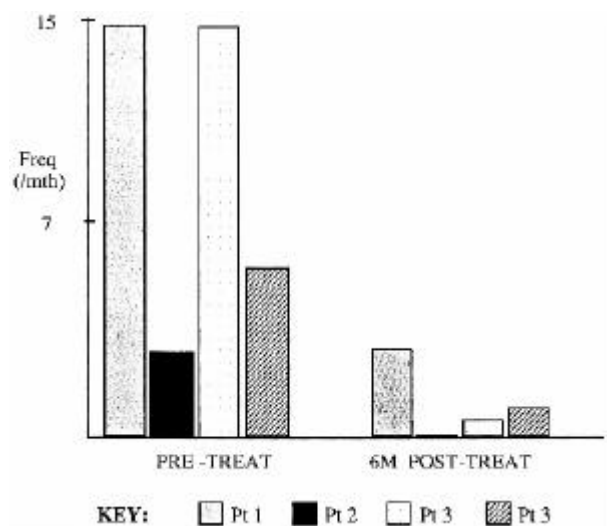


Figure 2: Changes in VAS scores of migraines for the four cases.

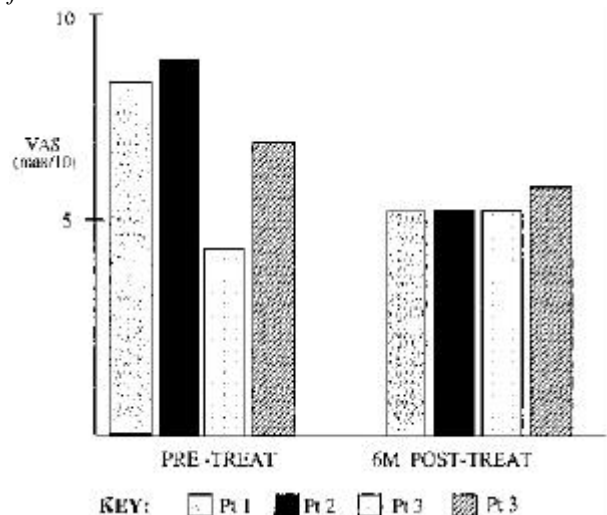


Figure 3: Changes in duration of migraines for the four cases.

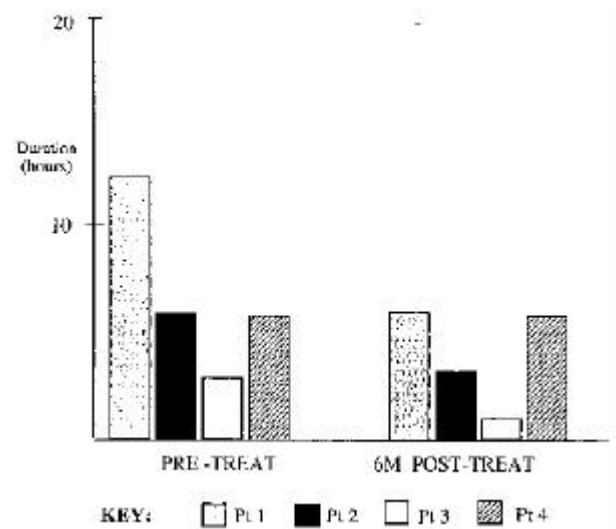
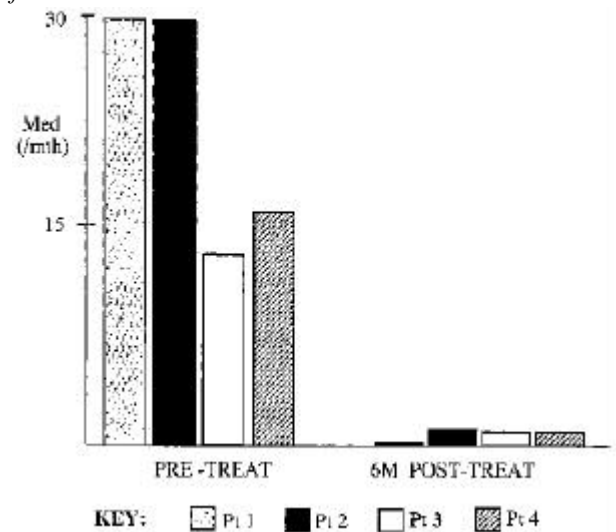


Figure 4: Changes in medication of migraines for the four cases.



treatment, releasing muscles spasm of the region before the adjustments were delivered. The patient was given 14 treatments over the two months of the research trial. Following the initial treatment she experienced some moderate neck pain which resolved following the next session.

Outcome

When contacted six months following the study, the patient stated the migraines had not experienced a migraine in the last four months. The last episode she had noted a VAS score reduced to four, the average duration had reduced to three days and she had now reduced her medication to nil (Fig's 1-4). In addition, she now experienced minor nausea, no photophobia or phonophobia, and she had substantially improved neck

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mobility. She had continued to have chiropractic treatment at a frequency of once a month, following the end of the research trial.

CASE 3

A 21 year old female, 171cm tall Caucasian presented with a chief complaint of severe migraines. Each episode lasted two to four hours, at a frequency of three to four episodes per week, and they had occurred for five years. The patient reported moderate posterior neck and shoulder pain, associated with the migraines. She also believed the initial migraine to be induced by stress and subsequent episodes were also aggravated by emotional stress. The patient reported no other health problems except very mild hypotension, for which she was not taking medication.

The patient's migraines were located in the frontal, temporal and occipital regions bilaterally. No symptoms occurred premonitory to the onset of her migraines, nor did she experience visual disturbances prior to or during the migraine episodes. She described the pain as a constant dull ache, which was local and she did not complain of any parathesias.

At the initial visit, she rated each migraine between 4 and 5 on a VAS of 1-10. She also noted she experienced nausea, vomiting, dizziness, photophobia and phonophobia.

The cervical ranges of motion were restricted, predominantly in right rotation. Palpation findings were obvious at trapezius, suboccipital and supra scapulae muscles due to increased tone, colour and temperature. Motion palpation indicated restricted movement of the C1-2 facet joint on the right side. Further palpation of the supra scapular and suboccipital indicated myofibrotic tissue. Neurological tests such as Rhombegs, and vertebrobasilar (Maines) test, were negative.

Treatment

The initial treatment was muscle stripping technique aided by a masseter machine massage across the muscle fibres of the trapezius, suprascapularis and temporal regions. The patient also had a cervical adjustment of C1-2, and adjustment to the T3-4 & T4-5 segments.

The patient was seen three days later, at which point she reported that her neck was less painful. However, she still complained of right neck pain and dizziness. Examination revealed passive motion restriction at C1-2 motion segment. Her thoracic spine was found to be restricted at segment T5-6. In addition, she had mild to moderate hypertonicity in suboccipital and cervical paraspinal muscles and supra scapular area. She was again treated

with adjustments and soft tissue technique. The C1-2 restriction to the right was adjusted with a cervical adjustment. The T5-6 restriction was also adjusted and the myofibrotic tissues were treated with the masseter.

The patient returned four days later. She reported that her migraine had improved. She no longer experienced the symptoms of a non-classical migraine. However, the pressure sensation was still present around her head, but less so than prior to the commencement of treatment. No neck pain was reported. Examination revealed a passive motion restriction of C1-2 motion segment. There was hypertonicity in the suboccipital and supra scapular muscles. The patient was treated with a cervical adjustment at C1-2 and muscle work on the above muscle groups. Neck stretching exercises were also advised.

Table 2: Changes in outcome measures of migraine episodes for the mean of the four cases (SE in brackets)

Outcome	Pre-study (baseline)	6 months	Reduction
Frequency	8.9 (3.0)	0.9 (0.4)	90%
VAS	7.3 (1.0)	5.5 (0.2)	25%
Duration	7.3 (1.7)	4.5 (1.2)	38%
Medication	22 (4.7)	1.3 (0.8)	94%

The patient was seen a total of thirteen times over a two month period, and stated that her migraine episodes had reduced significantly at the last treatment. In addition, she was no longer experiencing neck pain. Examination revealed passive motion restriction at the C1-2 motion segment, which was reduced by adjustment.

Outcome

The patient was contacted six months after the trial for a follow-up, at which point she reported she had experienced a reduction of migraine episodes to once every two months. However, her VAS scores for an average episode was now 5.5, but the duration of an average episode was reduced by 50%. In addition, she noted a reduction in photophobia and phonophobia, but still experienced some dizziness. The patient also noted a reduction in use of medication from three Nurofen a week (12 per month) to three per month, representing a 75% reduction (Fig's 1-4).

CASE 4

A 34 year old, 75kg Caucasian male presented with neck pain and migraines which had commenced after he had hit his head whilst surfing at a beach. This incident occurred when the patient was 19 years old but the patient said the migraines had peaked at 25 years of age. The patient stated that at 25 years of age he suffered a

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migraine headaches (three to four times per week) but now in the last year prior to his presentation he experienced them twice a week. He reported that his migraines started in the suboccipital region, and radiated to his right eye. He also reported they were a unilateral throbbing headache, an aura, nausea, vomiting, vertigo, and photophobia. The patient stated taking aspirin and mersyndol medication approximately four to five times a week.

The patient reported that an average episode lasted twelve to eighteen hours and he could perform duties after eight to ten hours. In addition a visual analogue scale score (VAS) for an average episode was 7.0 out of a possible maximum score of ten, corresponding to a description of "moderate" pain. He also reported that he had osteopathic treatment approximately three years earlier, which had given some short term relief, however, physiotherapy had proven ineffective.

On examination, he was found to have significant reduction in thoracic spine motion and an increase in thoracic kyphosis, and decreased range of motion at the joint between the first and second cervical vertebra (C1-2), the atlanto-occipital facet joint (Occ-C1), coupled with pain on flexion and extension of the cervical spine. He also had sensitive suboccipital and upper cervical musculature, especially the upper Trapezius muscle.

Treatment

The patient received chiropractic diversified adjustments to his C1-2 joint, upper thoracic spine and the affected hypertonic musculature. After a course of 14 treatments (conducted as part of a research program) the patient found he was experiencing one migraine per fortnight. The patient also reported that the nausea had decreased and that the aura was less significant.

The patient reported the improvement after the initial treatment had continued when the patient was contacted 6 months after the study had ceased. At that point the patient reported having one migraine a month, and that the VAS score had fallen to 6 out of ten. However, the average duration and return to normal activities time had remain the same as before the treatment had commenced. The patient reported that he now used only one medication per month and that he no longer experienced nausea, vomiting, and the aura (Fig's 1-4).

CONCLUSION

These four case studies highlight an apparent significant reduction in disability associated with migraines (Table 1). The conclusions are limited however, because the study does not contain a control group for comparison of placebo effect. Therefore chiropractic SMT appears to have significantly reduced migraine disability for these individuals.

Practitioners need to be critically aware of diagnostic criteria when presenting studies or case studies on effectiveness of their treatment (8). This is especially important in presentation of migraine and manipulative therapy research (12, 23).

Changes in outcome measures of migraine episodes for the mean of the four cases revealed some interesting findings (Table 2). As can be seen in the table, the frequency of episodes and the use of medication were substantially reduced for the four cases. However, one cannot conclude that this could be the case for other migraine sufferers due to the small number of cases presented.

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